

Circular Economy Development and Renewable Energy Law in China

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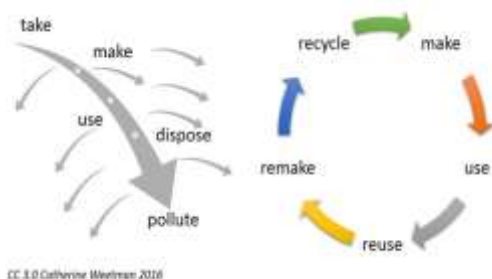
ABSTRACT

Circular economy is not just an environmental protection issue. In the current economic model, people have come up with many protective measures and remedies in response to the long-term damage of the social environment since the industrial revolution. However, such actions are passive. Compared with the linear economy, the circular economy adopts a positive and active attitude, trying to solve the most core problems at the source, raising the limited topic framework to a higher level and bringing more imagination.

Keywords: *Recycling economy; renewable energy law; recycling; ecological civilization*

1. PREFACE

Circular economy is a kind of regeneration system. By slowing down, closing and reducing the circulation of material and energy, the investment, waste and emission of resources can reach the goal of reduction. There are many different definitions of circular economy. For example, it is an idea that the future can be truly sustainable, zero waste, and can coexist with our environment and resources. The future imagined by circular economy is that each product manufactured is carefully designed and can be used in multiple cycles. Different materials and manufacturing cycles are carefully considered and matched, so that the output of one process can always be the input of another process. In the circular economy, it will be zero emission and zero waste. The by-products produced or damaged products or goods that no longer want to be used will not be regarded as "waste", but can become raw materials and materials for a new production cycle.



2. CONCEPT ORIGIN

Since the industrial revolution, people have been adopting a linear production and consumption mode: mining raw

materials from the natural environment, processing them into commodities, and then directly discarding them after they are purchased and used. Industrial processes and people's lifestyles constantly consume limited resources to create products, and then directly bury or burn them. As the demand for raw materials continues to increase, the cost of mining continues to grow, and the price of commodities is getting higher and higher, this phenomenon has prompted a small number of scientists to start thinking about new solutions, including Walter R. Stahel, the father of sustainable industry. Walter R. Stahel began to discuss "cradle to cradle (as opposed to cradle to grave)" in the late 1970s, and worked with product life to develop a closed-loop commodity process. Different from the resource exhaustion caused by linear economy, circular economy is an economic development mode based on the continuous recycling and utilization of materials, forming a cycle of "resources, products and renewable resources", making the whole system produce little waste, and even achieve the ultimate goal of zero waste. Circular economy believes that only the resources put in the wrong place, there is no real waste. Then fundamentally solve the contradiction between economic development and environmental impact.

The scope of circular economy includes tangible and intangible products, concepts, models and behaviors, including products, infrastructure, equipment and services. This concept is applicable to all industries, including "technical" resources (metal, mineral and petrochemical resources) and "biological" resources (food, fiber, wood, etc.). As the petrochemical industry has a decisive influence on human production mode, many thought leaders advocate starting from fossil fuel, shifting the industrial mode to the use of renewable energy, and emphasizing the characteristics of diversity, flexibility and system sustainability. In a wide range of discussions, the practical scope of circular economy also includes the

monetary and financial system. Through the generalized production system, the comprehensive reversal of the utilization of human economic resources can be achieved. Some other thought pioneers have begun to call for the transformation of economic performance measurement tools, and increase the weight of circular production mode in the measurement system.

Recycling economy is not just recycling. The improvement of recycling rate is a good thing, but the quality of recycled goods is really important. In fact, the recovery of many commodities is down cycling, the economic value of products or materials and the function of materials. After the recovery, only the time to delay the discarding is delayed. The resources in products can no longer become the nutrients of the next product, which is not conducive to reducing the exploitation of raw materials. The idea of circular economy is to recycle and then process the resources, so as to return the resources to the system of recycling supply of raw materials. In order to do so, we must redesign products, process, change business model, and also have supporting logistics measures.

3. RENEWABLE ENERGY LAW

Renewable energy includes wind energy, solar energy, water energy, biomass energy, geothermal energy, marine energy and other non fossil energy. China is rich in wind, solar, water and biomass energy, which has excellent conditions for development and utilization. Especially, hydropower accounts for 25% of the installed power. There are more than 800 counties in the country that mainly supply power with small hydropower. Even so, the utilization rate of hydropower development is less than 20%, which is good for accelerating the development of renewable energy. Different types of renewable energy, different technology maturity, and different specific supporting policies and measures. This law has just been passed, and it is still some time before it will be implemented on January 1 next year. It is also a time for the relevant departments of the State Council to study and draft supporting policies, regulations, relevant standards and other technical specifications. As stipulated in this law, for example, the grid connection technical standards of renewable energy power, on grid electricity price and on grid power generation cost sharing, special funds for renewable energy development, and policies to encourage the development of hydropower, etc., for example, when formulating policies, the power generation cost sharing of renewable energy on grid electricity price should take into account the difficulties of central and western provinces, and it should be relatively reasonable in the State Grid. It also shows that large thermal power plants should also support the development of renewable energy. It is urgent to formulate specific implementation methods and technical specifications and implement them simultaneously with this law. Some provisions in this law are made on the basis of current provisions, such as tax preference and other measures, which should be supplemented and improved as necessary. The formulation

of supporting policies, regulations and standards is not only necessary for the effective implementation of renewable energy law, but also a duty that the government and relevant departments must perform according to law.

At that time, with the rapid development of China's economy, on the one hand, the disadvantage of resource endowment is increasingly prominent, and the resource pressure of economic and social development is increasing; on the other hand, although China, as a developing country, does not have the international legal obligation to force the reduction of greenhouse gases in accordance with the requirements of the Kyoto Protocol, the extensive economic development model brings severe environment. The environmental and ecological problems, especially the increasing emissions, make the Chinese government bear enormous pressure to reduce emissions internationally. In addition to improving energy efficiency, the most effective solution is to develop renewable energy. It is in this context that the renewable energy law has been incorporated into the legislative planning of the Standing Committee of the Tenth National People's Congress. The renewable energy law was promulgated and implemented in 2006 and revised in 2009. This set of laws stipulates the formation mechanism and subsidy mechanism of renewable energy price. Under the strong promotion of laws and relevant supporting policies, the industry has made remarkable achievements.

The renewable energy law should combine the use of market mechanism with the support and guidance of the state. When talking about the implementation of the renewable energy law, Wang Maolin stressed that only the use of market mechanism combined with the support and guidance of the state can promote the development and utilization of renewable energy and industrial development, which is also proved by foreign practical experience. In order to promote the development of renewable energy, the renewable energy law stipulates that the State formulates the national total amount target of renewable energy development and utilization, decomposes it into relevant enterprises in each province, district and city, and ensures the completion. In terms of the main supporting measures, the successful experience of foreign countries is used for reference, and it is clearly stipulated that: the grid enterprises purchase the on grid electricity of renewable energy power generation projects in full amount, the purchase cost is higher than the difference of on grid electricity price of conventional energy generation, and it is added to the sales electricity price for sharing; it is also clear that the determination of on grid electricity price of renewable energy should be conducive to the development of renewable energy. An important purpose of developing renewable energy is to solve the problem of production and living energy in rural areas and remote areas. For this reason, this Law clearly stipulates that the State shall provide financial support for renewable energy utilization projects in rural areas, the State shall provide support and subsidies for the construction of independent renewable energy power system in areas not covered by the power grid, and provide special funds and policy support for the construction of

independent renewable energy power system in remote areas.

At the same time, this law also makes clear that: the state promotes technological progress in the development and utilization of renewable energy, reduces the production cost of renewable energy products, improves product quality, and promotes the establishment and development of renewable energy market; the on grid price of renewable energy power generation is determined on the basis of the principle that it is both conducive to the development and utilization of renewable energy and economic and reasonable, and on the basis of the development and utilization technology According to the law, bidding for renewable energy grid connected power generation projects is conducive to market competition and reduce the grid price. Considering the different conditions of China's economic and technological conditions and the utilization technologies of six kinds of renewable energy, this law has different provisions and focuses on the development and utilization of different renewable energy. For example, it only provides guidance for the solar energy utilization system, and does not provide specific provisions for the development and utilization of small-scale and immature renewable energy. Renewable energy can be used Guide in the development guidance catalog.

In addition, the development of hydropower is also an important part of renewable energy, which should be supported by policies. The renewable energy law has made it clear. However, it is necessary for the national development and Reform Commission, the Ministry of water resources and other relevant departments to formulate specific preferential policies to promote and encourage hydropower development as soon as possible. All departments of the government shall take their own responsibilities to closely cooperate with the development and utilization of renewable energy, which involves the national development and reform, science and technology, agriculture, water conservancy, land and resources, construction, environmental protection, forestry, ocean, meteorology and other departments. To implement this law, all levels of governments and relevant departments must take their own responsibilities according to the law, and formulate and improve the laws to promote the technological progress and production of renewable energy Policies and measures for industrial development shall be implemented. The management of the development and utilization of renewable energy in China is still lack of experience, which is inseparable from the close cooperation and mutual support of relevant government departments. There is also an urgent problem to be solved in the cultivation of technical management talents of renewable energy. The education department studies and sets up relevant specialties based on the actual situation in China. We should set up a scientific outlook on development and a correct outlook on political achievements, adhere to the administration according to law, serve the market subjects well, and make solid efforts to promote the development of renewable energy in China.

4. CONCLUSION

The substantial improvement of human material life is based on the consumption of energy, the exploitation of labor, the bulldozing of mountains and forests, the extinction of animals and plants, the serious environmental pollution, and the flow of toxic waste. We cannot ignore the impact of these actions on the earth's ecosystem and future generations. Through industrial transformation, citizens of the earth hope to move towards an ecological, sustainable and low-carbon green economy, respect the restrictions of environmental resources, and shake off the past industries and lifestyles with high pollution, high energy consumption, high water consumption and high working hours. The renewable energy law has played its due role: first, it has laid the foundation for the improvement of policy industry; second, the gradual improvement of renewable energy policy system has promoted industrial development and technological progress; third, it has mobilized the enthusiasm of investors. Meng Wei stressed: "next, the National People's Congress will strengthen the summary and evaluation of the implementation of the renewable energy law, so that the renewable energy law can truly play its due role.". More importantly, in accordance with the requirements of the Fourth Plenary Session of the 18th CPC Central Committee, we should accelerate the construction of ecological civilization system, including the legal system of renewable energy. In order to promote the development of renewable energy industry, we should establish a perfect system of rules and order to ensure that the renewable energy law "must be followed by laws, strictly enforced, and strictly punished for violations of laws". On this basis, we should further improve the system of industrial development To promote the healthy and sustainable development of renewable energy industry and make its due contribution to the construction of a beautiful China. "

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REFERENCES

- [1] Mohammad Ershadul Karim, Ridoan Karim, Md. Toriql Islam, et al. Renewable Energy for Sustainable Growth and Development: An Evaluation of Law and Policy of Bangladesh. 2019, 11(20)
- [2] Kim Schumacher. Approval procedures for large-scale renewable energy installations: Comparison of national legal frameworks in Japan, New Zealand, the EU and the US[J]. Energy Policy,2019,129.

[3] Energy - Renewable Energy; Findings from University of Shandong Has Provided New Data on Renewable Energy (China's Renewable Energy Law and Policy: a Critical Review) [J]. *Energy Weekly News*,2019.

[4] Nana Asare Obeng-Darko. Why Ghana will not achieve its renewable energy target for electricity. Policy, legal and regulatory implications[J]. *Energy Policy*,2019,128.

[5] G.Notton,J.L. Duchaud,M.L. Nivet,C. Voyant,K. Chalvatzis,A. Fouilloy. The electrical energy situation of French islands and focus on the Corsican situation[J]. *Renewable Energy*,2019,135.

[6] Energy - Renewable Energy; Findings from University of Lugano Update Understanding of

Renewable Energy (Renewable Energy Subsidies and WTO Law: Time to Rethink the Case for Reform Beyond Canada - Renewable Energy/Fit Program) [J]. *Energy Weekly News*,2019.

[7] Junxia Liu. China's renewable energy law and policy:A critical review[J]. *Renewable and Sustainable Energy Reviews*,2019,99.

[8] Australian Renewable Energy Law. 2018, 9(1):44-67.

[9] Energy - World Energy Law and Business; New Data from G.N. Zheng et al Illuminate Findings in World Energy Law and Business (Re-imagining Fiji's regulatory reforms for renewable energy: the potential of the energy co-operativemodel)[J]. *Energy Weekly News*, 2018.